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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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S EXC-0001

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QM01/1025

EXAMINER

JEFFERY, J

ART UNIT	PAPER NUMBER
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3742

DATE MAILED:

10/25/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/679096

Applicant(s)

Aisenberg

Examiner

Jeffery

Group Art Unit

3742

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 9/27/01
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-12, 14-17, & 27-35 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-12, 14-17, & 27-35 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☒ The proposed drawing correction, filed on 9/27/01 is ☒ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 5
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

The proposed amended title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The proposed title is equally readable on the prior art.

The following title is suggested: "Dryer With Outlet Having Perimeter to Area Ratio Greater Than 2.5."

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligations under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 27 is rejected under 35 USC 102(b) as being anticipated by EP400381 or Goldstein (US3305938). Note blower 4, heater 13, tubular air outlet 11, "channel" 10 in communication with the outlet 11, and further heater 14 in the channel. See Figs. 1-3. Also, in Goldstein (US3305938), note in Fig. 1 air outlet 16 on left with heater 18, "channel" 16 on the right, and "further heater" 18 therein.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claim 28 is rejected under 35 USC 103(a) as being unpatentable over WO94/23611 in view of WO83/02753 or JP5-130915. See Fig. 6 of WO94/23611. Note "inner air outlet" and "outer air outlet" 74 surrounding the inner air outlet. Both the airflow within the inner nozzle and outer nozzle are heated by the electric heater prior to flowing in the respective nozzles. Thus, the heated outer airstream contains only air from the heated airstream. The claims differ from the previously cited prior art in calling for the inner air outlet to include a plurality of perforations. While no perforations are shown in Fig. 6, providing perforations to direct a portion of an airstream from an inner airstream to a surrounding airstream is conventional and well known in the art as evidenced by WO83/02753 noting perforations 42. Furthermore, JP5-130915 in Fig. 8 discloses the use of "perforations" 23 to provide an outer airflow of heated air coaxial to the inner heated airflow issuing from nozzle 20. Compare Fig. 7 with Fig. 8. Also, WO '611 in Fig. 2 wherein perforations within the nozzle are provided to mix airflows both within and exterior to the nozzle. In view of WO83/02753 or JP5-130915, it would have been obvious to one of ordinary skill in the art to provide perforations for mixing airflow in lieu of the disclosed passages so that only a limited amount of air was permitted to flow via the perforations thereby reducing the volume of airflow therethrough.

Claims 1-9, 14, and 29-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbertson (US4634839) in view of Sheridan (US4349725). Gilbertson (US4634839) discloses an electrically heated dryer with a blower for directing air via cylindrical nozzle 34 to small areas such as a tooth to be dried in dentistry. See Col. 1, lines 5-15. Gilbertson (US4634839) discloses all of the structure claimed except for the air outlet to have specifically a P/A ratio greater than 2.5. According to the instant specification, the P/A ratio is determined from the formula as given on Page 9, line 10. Since there are common terms in both the numerator and denominator, the given formula can be simplified to the following formula: $P/A = 2/r$. Thus, the P/A ratio is merely dependent upon the choice of the value of the radius (or diameter) of the outlet. While the specific diameter dimensions of the outlet are not disclosed by Gilbertson (US4634839), outlet sizes in heated air drying apparatus are typically chosen dependent upon the size of workpiece to be dried. Accordingly, the outlet size is so chosen to substantially match the workpiece size. Such an outlet size choice is explained in Sheridan (US4349725) in Col. 3, lines 13-24 wherein the size of the outlet of a directed air heater for dental purposes is varied depending upon the size of the work to be heated (i.e., a single tooth, or multiple teeth). Furthermore, in view of the relatively small size of teeth (i.e., on the order of tenths of an inch), the corresponding outlet size substantially matching the tooth size would yield outlet P/A ratios in the claimed range. Thus, in view of Sheridan (US4349725), it would have been obvious to one of ordinary skill in the art to select an outlet size for a given size tooth, and therefore with a dimension yielding the claimed P/A range,

so that heated air issuing from the device is localized on the tooth to be dried thereby minimizing undesired collateral heated air contact with other teeth. The limitation that the units of the ratio be expressed as "inch⁻¹" is merely a matter of engineering design preference within the level of one of ordinary skill in the art. Furthermore, it is well settled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955). With regard to claim 29, wall-mounted air blowers are conventional and well known in the art for drying purposes and wall-mounting a heated air blower does not constitute a patentably distinguishable characteristic of the invention.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbertson (US4634839) in view of Sheridan (US4349725) and further in view of Tomaro (US4327278). The claims differ from the previously cited prior art in calling for the blower to generate an air velocity of no less than 18,000 fpm. According to the instant specification on Page 17, lines 10-15, to achieve such an airflow rate, a motor that operates at greater than 15,000 rpm must be used. While the specific air velocity of the blower of the previously described apparatus is not recited, providing blowers which operate in excess of 15,000 rpm in electrically heated hair dryers is conventional and well known in the art as evidenced by Tomaro (US4327278) noting Col. 2, lines 55-57 wherein a blower motor with a loaded speed of 19,000 rpm is disclosed. In view of Tomaro (US4327278), it would have been obvious to one of ordinary skill in the art to utilize a blower motor in excess of 15,000 rpm in the previously described apparatus in order to increase the rotational rate of the blower thereby increase the heated airflow issuing therefrom.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbertson (US4634839) in view of Sheridan (US4349725) and further in view of Hersh et al (US4596921). The claims differ from the previously cited prior art in calling for sound absorbing material positioned in a cavity. Providing sound absorbing material in an electrically heated air blower to attenuate fan noise is conventional and well known in the art as evidenced by Hersh et al (US4596921) noting material 23 in Fig. 2 and Col. 3, lines 1-35. In view of Hersh et al (US4596921), it would have been obvious to one of ordinary skill in the art to provide sound absorbing material in the previously described apparatus so that excessive noise generated by the fan is attenuated. With regard to claim 12, the sound absorbing material of Hersh et al (US4596921) is disposed in a "cavity" and would inherently generate reflections from sound waves contacting the material.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbertson (US4634839) in view of Sheridan (US4349725) and further in view of Bergeron (US2478559). The claims differ from the previously cited prior art in

calling for a brushless and a brush-type motor. Providing a brush-type motor in an electrically heated air dryer is conventional and well known in the art as evidenced by Bergeron (US2478559) noting commutator motor with brushes 16. In view of Bergeron (US2478559), it would have been obvious to one of ordinary skill in the art to provide a commutator motor (i.e., a brush type motor) in the previously described apparatus so that a small high-speed motor was utilized to power the fan. With regard to claim 15, brushless motors are well known in the art, conventionally used for the same purpose, and do not constitute a patentably distinguishable characteristic of the invention.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbertson (US4634839) in view of Sheridan (US4349725), Bergeron (US2478559), JP5-91755, and further in view of Lambright (US-H677). The claims differ from the previously cited prior art in calling for a surge suppressor in series with the brush motor. The use of surge suppressors in conjunction with commutator motors in blowers is conventional and well known in the art as evidenced by JP5-91755 noting surge suppressor 1 comprising a filter circuit which is connected to the motor. See Abstract. While the filter is connected in parallel to the motor, no criticality is seen with respect to a series connection versus a parallel connection and the choice of either a series or parallel circuit connection would have been within the level of one of ordinary skill in the art in view of impedance matching, loading, and other electrical design considerations. In view of JP5-91755, it would have been obvious to one of ordinary skill in the art to provide a surge suppressor connected to the commutator motor of the previously described apparatus so that current surges are attenuated upon startup of the motor thereby prolonging brush life. The claims also differ from the previously cited prior art in calling for the surge suppressor to be a thermistor. Providing a thermistor for a surge suppressor in a blower motor is conventional and well known in the art as evidenced by Lambright (US-H677) noting thermistors T1-T3 which ensure the inrush current is limited by using a temperature responsive element whose resistance changes with sensed temperature. In view of Lambright (US-H677), it would have been obvious to one of ordinary skill in the art to use a series-connected thermistor for the surge suppressor of the previously described apparatus in order to ensure the inrush current is limited by using a temperature responsive element whose resistance changes with sensed temperature.

Applicant's arguments filed 9/27/01 have been fully considered but they are not deemed to be persuasive.

Selecting the P/A ratio as claimed is within the level of one of ordinary skill in the art.

Applicant argues that the examiner's comments regarding the P/A ratio is mere speculation in view of Gilbertson in view of Sheridan. However, as noted by the examiner in the rejection, according to the instant specification, the P/A ratio is determined from the formula as given on Page 9, line 10 which can be simplified to the following formula: $P/A = 2/r$. Thus, the P/A ratio is merely dependent upon the choice of the value of the radius (or diameter) of the outlet.

The narrowest range of values claimed is found in claims 7 and 35 where the P/A ratio is greater than 5 and less than 7. Substituting values into the above equation yields values of r of 2/7 inches (0.286 in) to 2/5 (0.4) inches.

While the specific diameter dimensions of the outlet are not disclosed by Gilbertson (US4634839), outlet sizes in heated air drying apparatus are typically chosen dependent upon the size of workpiece to be dried. Accordingly, the outlet size is so chosen to substantially match the workpiece size.

As noted in the rejection, such an outlet size choice is explained in Sheridan (US4349725) in Col. 3, lines 13-24 wherein the size of the outlet of a directed air heater for dental purposes is varied depending upon the size of the work to be heated (i.e., a single tooth, or multiple teeth). Furthermore, in view of the relatively small size of teeth (i.e., on the order of tenths of an inch), the corresponding outlet size substantially matching the tooth size would yield outlet P/A ratios in the claimed range. Thus, in view of Sheridan (US4349725), it would have been obvious to one of ordinary skill in the art to select an outlet size for a given size tooth, and therefore with a dimension yielding the claimed P/A range, so that heated air issuing from the device is localized on the tooth to be dried thereby minimizing undesired collateral heated air contact with other teeth. The limitation that the units of the ratio be expressed as "inch⁻¹" is merely a matter of engineering design preference within the level of one of ordinary skill in the art given the specific units of length used.

Applicant's characterization of the workpiece size in the prior art still meets the claims as amended.

On Page 8, last line - Page 9, line 2 of the remarks, Applicant characterizes the examiner's argument that tooth sizes to be heated are "on the order of several tenths of an inch" by using only a single value of 0.1 inch. After substituting 0.1 inch in the equation, Applicant then concludes that the resulting value of 20 inch⁻¹ exceeds the upper limit recited in claims 3 and 4. It is particularly noteworthy that Applicant does not apply this argument to claims 1 and 2 which recite no such upper limit.

However, for the sake of argument, even if Applicant's chosen value of 0.1 inch is the only workpiece size possible, it still meets the claims as amended--particularly claims 1, 2, 32, and 33 which recite no upper bound at all. Thus, the value of 0.1 inch would yield a P/A ratio certainly greater than 5 inch^{-1} as recited in claims 2 and 33.

Notwithstanding the fact that Applicant's value meets claims 1, 2, 32, and 33, the examiner was not intending to limit the workpiece size to 0.1 inch as inferred by Applicant. Instead, the examiner deliberately used the term "on the order of tenths of an inch" to assert that tooth sizes can vary in various values less than 1 inch. The word "tenths" as used by the examiner certainly expresses more than one-tenth.

Taking the range of values claimed in claim 4 (i.e., greater than 5 inch^{-1} and less than 7 inch^{-1}), the resulting values of "r" are 0.286 inch for the lower limit and 0.4 inch for the upper limit. Clearly, tooth sizes "on the order of tenths of an inch" fall within this range.

The claimed values of the P/A ratio constitutes the mere discovery of optimum or workable ranges by routine experimentation.

It is well settled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955). Furthermore, a mere change in size or proportion between a claimed device and the prior art is not patentably distinct from the prior art device. In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

In this case, the choice of outlet size and the resulting P/A ratio claimed in the instant application is the mere discovery of optimum or workable ranges by routine experimentation. The desired convective heating effect achieved would have been within the level of one of ordinary skill in the art during the course of routine optimization and experimentation in varying the airflow rate and corresponding heating effect by varying the outlet size.

The same argument holds true for the airflow velocity value claimed in claim 10. The examiner notes that the motor rotation rate of 18,000 rpm is 3,000 rpm greater than that specified in the instant specification on Page 17, lines 10-15 to achieve the desired airflow rate. While motor rotation rate is not the only parameter involved that affects airflow, it is a substantial factor in achieving a desired flow rate. This is evidenced by Applicant's point in the specification noting the

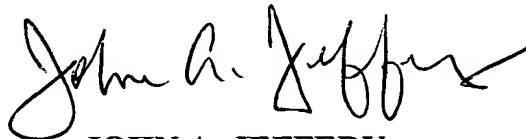
criticality of the motor rpm value of greater than 15,000 rpm. Choosing other factors influencing airflow rate such as fan blade size, angle, and the like to maximize the flow rate of aspirated air is well within the level of one of ordinary skill in the art.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO A FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CFR 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any inquiry concerning this or earlier communications from the examiner should be directed to John A. Jeffery at telephone number (703) 306-4601 or fax (703) 305-3463. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM EST. The examiner can also be reached on alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0861.



JOHN A. JEFFERY
PRIMARY EXAMINER

10/22/01